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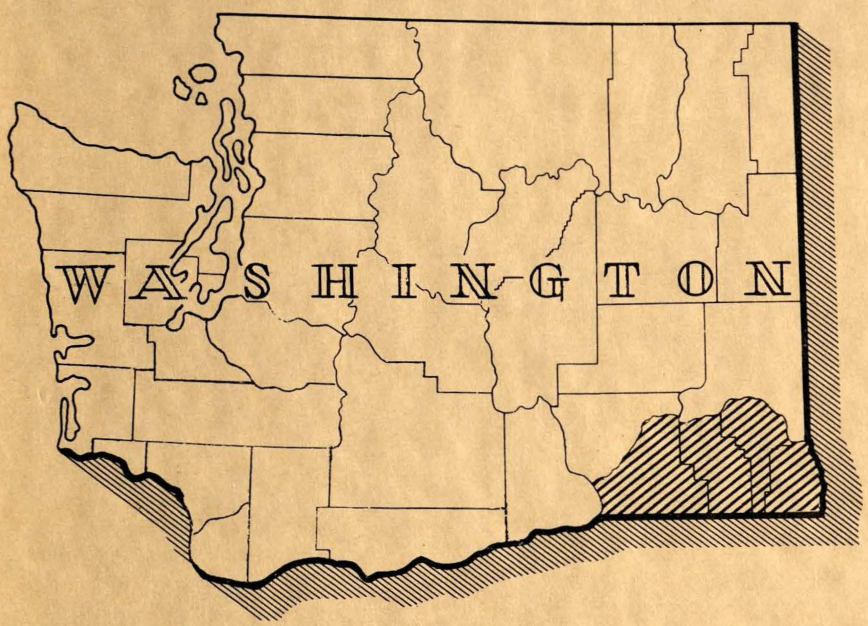
FOREST SURVEY REPORT 136

JULY 1960

FOREST STATISTICS *for* SOUTHEAST WASHINGTON



PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
U. S. DEPT. OF AGRICULTURE • FOREST SERVICE

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Forest Survey Report 136

FOREST STATISTICS

FOR

SOUTHEAST WASHINGTON

by

James T. Bones
and
James E. Simonson

July 1960

PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
R. W. Cowlin, Director Portland, Oregon

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

PREFACE

This publication summarizes the results of a 1957 reinventory of the forests of Asotin, Columbia, Garfield, and Walla Walla Counties in southeast Washington. The reinventory is a part of the maintenance phase of the Forest Survey, a nationwide project of the Forest Service authorized by the McSweeney-McNary Forest Research Act of 1928, amended June 25, 1949. The purpose of the Forest Survey is to periodically inventory the extent and condition of forest lands and the timber and other products on them, to ascertain rates of forest growth and depletion, to estimate present consumption of timber products and determine probable future trends in timber requirements, to analyze and make available survey information needed in the formulation of forest policies and programs, and to make resurveys as necessary to keep the basic information up to date.

The Forest Survey is conducted in the various forest regions of the Nation by the regional experiment stations of the Forest Service. In the Pacific Northwest region of Oregon and Washington, it is an activity of the Pacific Northwest Forest and Range Experiment Station at Portland, Oreg.

The initial inventory of forest lands in these four counties took place in 1935. A statistical report, "Forest Statistics for Walla Walla, Columbia, Garfield, and Asotin Counties, Washington," and forest type maps on a 1-inch-to-the-mile scale were released in 1936.

The forest type maps have been revised as a result of the 1957 reinventory and are available on scales of 1 and 2 inches to the mile. A single 1-inch-scale map was prepared for each county; the 2-inch-scale maps were prepared in sections (see index map, inside rear cover). Any of these maps may be obtained at cost of blueprinting. For information write Director, Pacific Northwest Forest and Range Experiment Station, P.O. Box 4059, Portland 8, Oreg.

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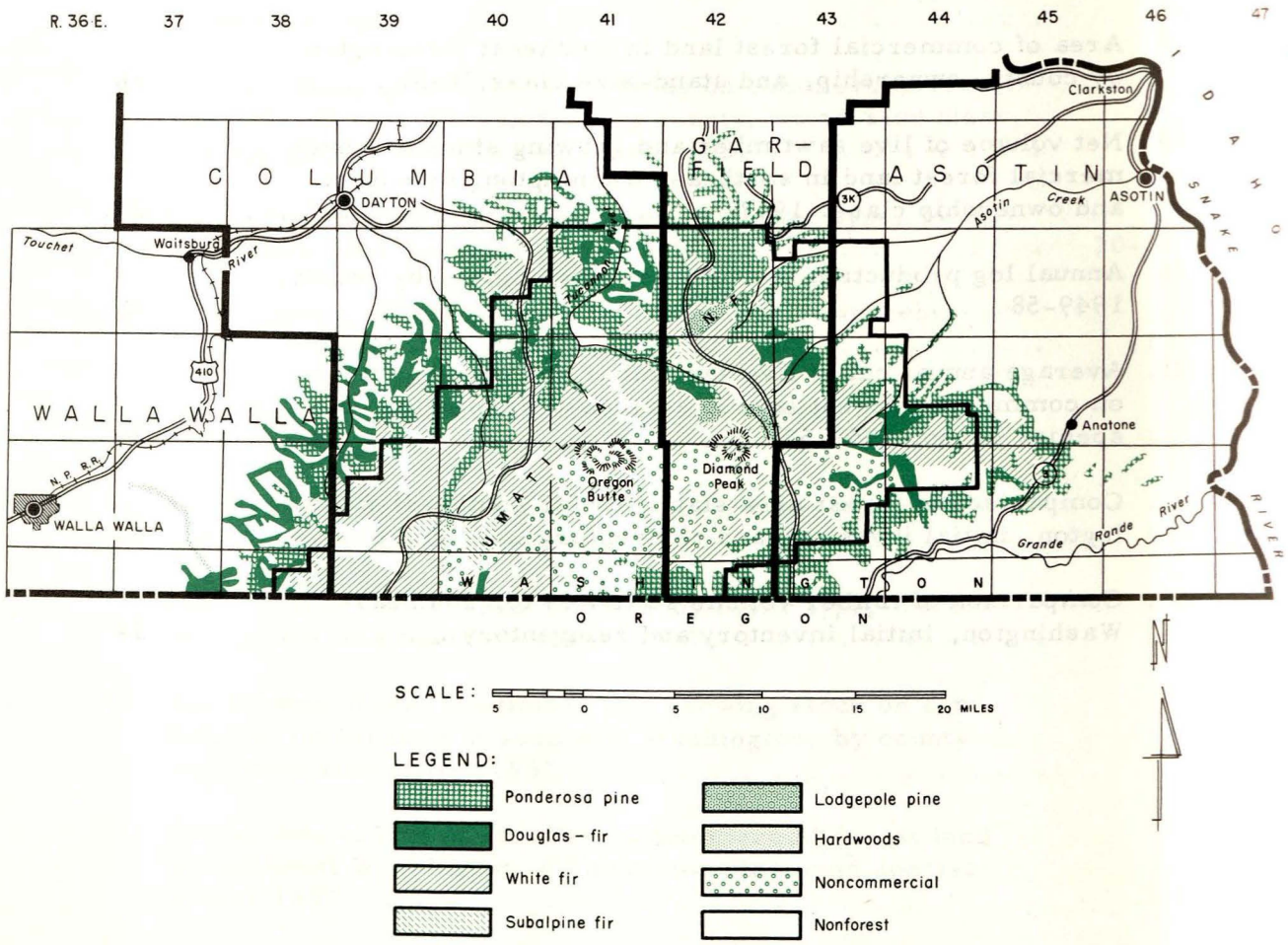
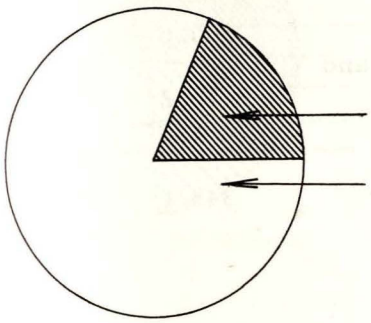
GENERALIZED FOREST TYPE MAP

SOUTHEAST WASHINGTON

1957

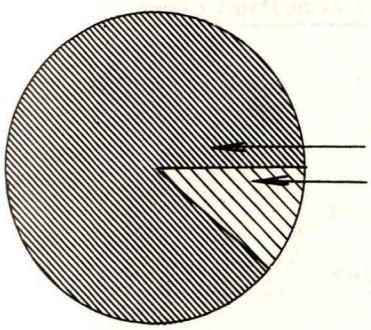


SIGNIFICANT FINDINGS OF THE FOREST INVENTORY



Area of all land

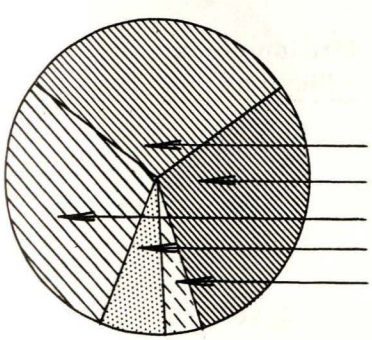
	M acres	Percent
Forest	386.4	17
Nonforest	1,846.6	83
Total	2,233.0	100



Area of forest land

	M acres	Percent
Commercial	345.1	89
Noncommercial	41.0	11
Reserved commercial	.3	(1/)
Total	386.4	100

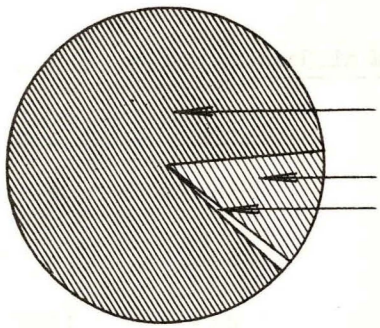
1/ Less than 0.5 percent.



Area of commercial forest land, by forest types

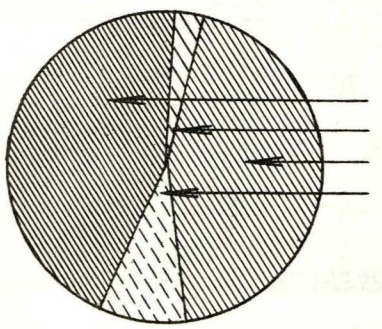
	M acres	Percent
Douglas-fir	104.8	30
Ponderosa pine	101.7	30
Fir-spruce	98.4	29
Western larch	25.8	7
Others	14.4	4
Total	345.1	100

Area of commercial forest land, by stand-size class



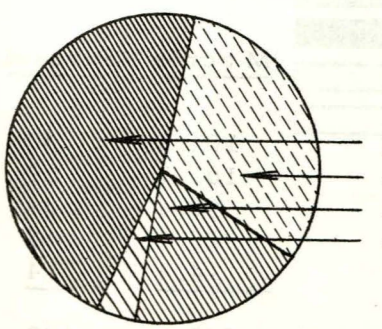
	M acres	Percent
Sawtimber	300.6	87
Poletimber; seedlings and saplings	40.2	12
Nonstocked	4.3	1
Total	345.1	100

Area of softwood sawtimber stands on commercial forest land, by condition class



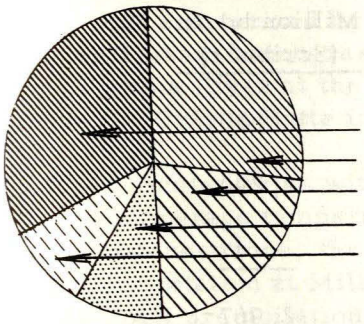
	M acres	Percent
Large uncut sawtimber	132.3	44
Large residual sawtimber	8.4	3
Small uncut sawtimber	132.4	44
Small residual sawtimber	26.6	9
Total	299.7	100

Volume of sawtimber on commercial forest land, by diameter class



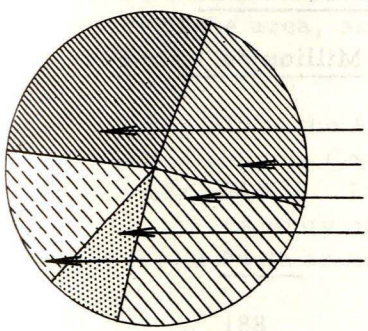
	Million bd. ft. (Scribner)	Percent
11.0-20.9 inches d.b.h.	1,374	46
21.0-30.9 inches d.b.h.	940	32
31.0-40.9 inches d.b.h.	544	18
41.0 inches and larger	109	4
Total	2,967	100

Volume of live sawtimber on commercial forest land, by species



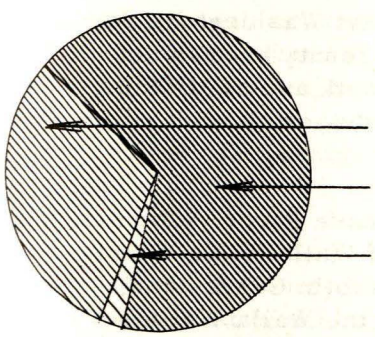
	Million bd. ft. (Scribner)	Percent
Douglas-fir	952	32
Ponderosa pine	827	28
White fir	649	22
Western larch	271	9
Other species	268	9
Total	2,967	100

Volume of growing stock on commercial forest land, by species



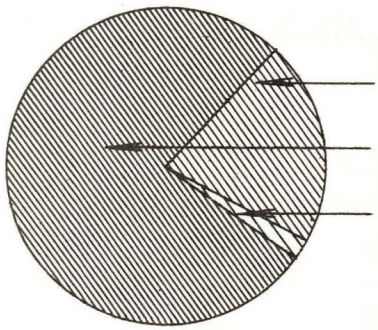
	Million cu. ft.	Percent
Douglas-fir	252	29
Ponderosa pine	207	23
White fir	223	25
Western larch	70	8
Other species	129	15
Total	881	100

Ownership of commercial forest land



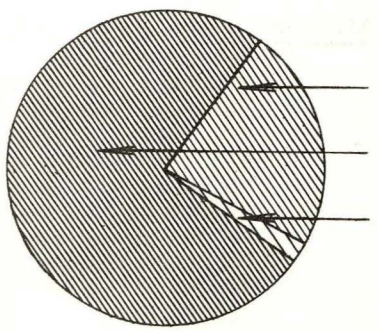
	M acres	Percent
Private	107.1	31
Federal	230.5	67
Other public	7.5	2
Total	345.1	100

Ownership of live sawtimber volume on commercial forest land



	Million bd. ft. (Scribner)	Percent
Private	630	21
Federal	2,290	77
Other public	47	2
Total	2,967	100

Ownership of growing stock on commercial forest land



	Million cu. ft.	Percent
Private	201	23
Federal	666	75
Other public	14	2
Total	881	100

DESCRIPTION OF THE COUNTIES

There are four forested counties in southeast Washington: Asotin, Columbia, Garfield, and Walla Walla. This four-county area is bounded on three sides by rivers, the Snake on the east and north and the Columbia on the west. The Washington-Oregon border is the southern boundary, common to all four counties.

All but two major streams drain into the Snake River, which empties into the Columbia River at the northwest corner of Walla Walla County. These streams include the Grande Ronde River, Asotin Creek, and the Tucannon River. The Touchet River empties into the Walla Walla River, and the Walla Walla--which drains the western part of Walla Walla County--empties directly into the Columbia.

The physiography of this area falls into two contrasting zones. The forest zone, located in the south-central part, is the northern terminus of the Blue Mountains. The nonforest zone, occupying the balance of the land area, is characterized by the rolling plateaus and sloping plains of the Columbia Basin bunchgrass prairie. Elevations vary from 319 feet along the Columbia River at the Oregon-Washington border to 6,401 feet at the summit of Oregon Butte in Columbia County.

Climate varies with elevation. At Anatone (3,570 feet), in the forest zone, the average temperature was 46.5° in 1958. At Clarkston (1,186 feet), in the nonforest zone, the average temperature was 53.7° in the same year. Total precipitation at Mill Creek, in the forest zone, was 47.65 inches in 1958. Total precipitation the same year at Walla Walla, in the nonforest zone, was 19.62 inches.

The four-county area is traversed by primary Federal Highways 410 and 295 and State Highway 3. Additional access is provided by numerous State secondary and county roads. Branch lines of the Union Pacific and Northern Pacific railroads link principal population centers of the western two-thirds of the area, and the Columbia River is navigable to its confluence with the Snake River.

According to the 1950 U.S. Census, the population of Asotin County was 10,878; Columbia County, 4,860; Garfield County, 3,204; and Walla Walla County, 40,135. Except in Garfield County, which had no urban residents, the majority of the people live in urban areas. The largest city is Walla Walla, with an estimated 24,102 inhabitants.

FOREST RESOURCE

Forest Land Area

The forested area, concentrated in the south-central part of the four-county area, constitutes 17 percent of the total land area. Most of the wood-using industries are situated in the larger communities, which are located on the major rivers and streams adjacent to the forest area.

Columbia County, with 35 percent of its total land area forested, has nearly half the 386,000 acres of forest land contained in the four-county area.

Garfield County has nearly 98,000 acres of forest land, which is about 25 percent of the total forest land in the area.

Asotin and Walla Walla Counties have the remaining 25 percent.

Table 1.--Land area in southeast Washington, by major class of land, 1957

(In thousands of acres)

Class of land	Total	Asotin County	Columbia County	Garfield County	Walla Walla County
Forest:					
Commercial	345.1	61.4	167.5	92.8	23.4
Noncommercial:					
Productive-reserved	.3	.3	--	--	--
Unproductive	41.0	11.9	23.7	5.0	.4
Total forest	386.4	73.6	191.2	97.8	23.8
Nonforest	1,846.6	327.7	359.2	359.2	800.5
All classes	2,233.0	401.3	550.4	457.0	824.3

Commercial Forest Land Area

Major Types

The forests of southeast Washington are mainly softwood. The Douglas-fir type predominates, with ponderosa pine a close second. These two major types account for almost 60 percent of the total commercial forest land area. The other major types are fir-spruce, western larch, and lodgepole pine.

The predominant type in Asotin County is ponderosa pine, 48 percent of which is in the small-sawtimber size class.

In Columbia County, the fir-spruce type predominates and Douglas-fir and ponderosa pine types rate second and third, respectively.

Of nearly 93,000 acres of commercial forest land in Garfield County, about 29,000 acres are ponderosa pine and 27,000 acres are Douglas-fir.

Walla Walla County has only 23,000 acres of commercial forest land. Douglas-fir, the major type, constitutes 44 percent of this.

Table 2.--Area of commercial forest land in southeast Washington, by forest type and stand-size class, 1957

(In thousands of acres)

Forest type	Total	Sawtimber stands		Poletimber stands	Seedling and sapling stands	Nonstocked areas
		Large[1/]	Small[2/]			
Douglas-fir	104.8	28.1	58.9	17.7	0.1	--
Ponderosa pine	101.7	58.6	36.6	5.6	.9	--
Fir—spruce	98.4	45.4	44.5	8.5	(3/)	--
Western larch	25.8	8.6	14.0	3.1	.1	--
Lodgepole pine	9.1	--	5.0	4.0	.1	--
Hardwood	1.0	.2	.7	--	.1	--
Nonstocked	4.3	--	--	--	--	4.3
Total	345.1	140.9	159.7	38.9	1.3	4.3

[1/] 21.0 inches d.b.h. and larger.

[2/] 11.0-20.9 inches d.b.h.

[3/] Less than 0.05 thousand.

Stand-Size Classes

Douglas-fir, first in importance as to extent, occurs principally as small-sawtimber stands in all of the counties. Second-ranking ponderosa pine occurs primarily in large-sawtimber stands in Columbia and Garfield Counties, but mostly in small-sawtimber stands in Asotin and Walla Walla Counties.

Douglas-fir is the predominant species in the poletimber stands in all counties.

Seedling and sapling stands and nonstocked areas occur in small amounts in all counties. These range from 4.5 percent of the commercial forest land in Walla Walla County to 0.8 percent in Garfield County.

Most of the sawtimber stands in the counties are uncut. The percentage of area in residual sawtimber stands, resulting from light cutting, is greatest in Asotin and Walla Walla Counties.

Acreage in hardwood stands is quite small. These stands are confined for the most part to bottom lands along the major streams,

running out in fingers from the general forest edge into adjoining agricultural areas.

Table 3.--Area of commercial forest land in southeast Washington, by forest-condition class, 1957

(In thousands of acres)

Forest-condition class	Total	Asotin County	Columbia County	Garfield County	Walla Walla County
Softwoods:					
Large sawtimber:					
Uncut	132.3	17.3	70.8	36.6	7.6
Residual	8.4	2.8	3.6	1.0	1.0
Total	140.7	20.1	74.4	37.6	8.6
Small sawtimber:					
Uncut	132.4	17.0	70.2	35.1	10.1
Residual	26.6	13.1	5.7	5.7	2.1
Total	159.0	30.1	75.9	40.8	12.2
Poletimber	38.9	9.2	15.3	13.6	.8
Seedlings and saplings	1.2	.5	.4	.1	.2
Hardwoods	1.0	.2	.1	(1/)	.7
Nonstocked	4.3	1.3	1.4	.7	.9
Total	345.1	61.4	167.5	92.8	23.4

1/ Less than 0.05 thousand.

Stocking of Young-Growth Stands

In classifying young-growth stands for stocking, all commercial tree species and tree sizes are considered. A young-growth sawtimber stand may be classed as well stocked on the basis of sawtimber-size trees, poletimber, seedlings and saplings, or any combination of these tree sizes.

Of the 200,000 acres of young-growth stands in southeast Washington, only 7.5 percent is classed as poorly stocked. The poorly stocked land is not confined to one area or county but is evenly distributed throughout the timbered zone.

Table 4.--Area of young-growth timber stands on commercial forest land in southeast Washington, by county, stand-size class, species group, and stocking class, 1957[1/]

(In thousands of acres)

Stand-size class and species group	Total	Asotin County			Columbia County			Garfield County			Walla Walla County		
		Well stocked	Medium stocked	Poorly stocked	Well stocked	Medium stocked	Poorly stocked	Well stocked	Medium stocked	Poorly stocked	Well stocked	Medium stocked	Poorly stocked
Young-growth sawtimber:													
Softwoods	159.0	19.5	9.2	1.4	59.2	13.5	3.2	34.0	3.5	3.3	9.3	1.7	1.2
Hardwoods	.7	.1	.1	(2/)	--	--	(2/)	--	--	--	.5	(2/)	(2/)
Total	159.7	19.6	9.3	1.4	59.2	13.5	3.2	34.0	3.5	3.3	9.8	1.7	1.2
Poletimber:													
Softwoods	38.9	4.2	3.6	1.4	8.8	3.0	3.5	9.5	3.4	.7	.5	.3	(2/)
Hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	38.9	4.2	3.6	1.4	8.8	3.0	3.5	9.5	3.4	.7	.5	.3	(2/)
Seedlings and saplings:													
Softwoods	1.2	.2	.2	.1	.2	.1	.1	--	.1	(2/)	(2/)	.2	(2/)
Hardwoods	.1	--	--	--	--	(2/)	.1	--	--	--	--	--	--
Total	1.3	.2	.2	.1	.2	.1	.2	--	.1	(2/)	(2/)	.2	(2/)
All classes:													
Softwoods	199.1	23.9	13.0	2.9	68.2	16.6	6.8	43.5	7.0	4.0	9.8	2.2	1.2
Hardwoods	.8	.1	.1	(2/)	--	(2/)	.1	--	--	--	.5	(2/)	(2/)
Total	199.9	24.0	13.1	2.9	68.2	16.6	6.9	43.5	7.0	4.0	10.3	2.2	1.2

[1/] Young-growth stands are those in which the majority of the cubic-foot volume is in trees less than 21.0 inches d.b.h.

[2/] Less than 0.05 thousand.

Table 5.--Land area in southeast Washington, by cover

(In thousands

	Cover type or land class	Total unreserved and reserved
		PRODUCTIVE
		Total
1	Ponderosa pine, large sawtimber	58.7
2	Ponderosa pine, small sawtimber	36.6
3	Ponderosa pine, poletimber	5.6
4	Ponderosa pine, seedlings and saplings	.9
5	Lodgepole pine, small sawtimber	5.0
6	Lodgepole pine, poletimber	4.0
7	Lodgepole pine, seedlings and saplings	.1
8	Douglas-fir, small old-growth and large young-growth sawtimber (red fir)	28.1
9	Douglas-fir, small sawtimber	58.9
10	Douglas-fir, poletimber	17.7
11	Douglas-fir, seedlings and saplings	.1
12	Western larch, large sawtimber	8.6
13	Western larch, small sawtimber	14.0
14	Western larch, poletimber	3.1
15	Western larch, seedlings and saplings	.1
16	White fir,[2] large sawtimber	40.6
17	White fir, small sawtimber	32.2
18	White fir, poletimber	4.6
19	White fir, seedlings and saplings	(1/)
20	True fir—mountain hemlock, large sawtimber	1.2
21	True fir—mountain hemlock, small sawtimber	5.6
22	True fir—mountain hemlock, poletimber	3.9
23	Engelmann spruce, large sawtimber	3.7
24	Engelmann spruce, small sawtimber	6.8
25	Hardwood, large sawtimber	.2
26	Hardwood, small sawtimber	.7
27	Hardwood, seedlings and saplings	.1
28	Nonstocked area	4.3
29	Total	345.4
		NONCOMMERCIAL
30	Noncommercial, rocky	41.0
31	Total	41.0
		NONFOREST
32	Vegetative land (cultivated, grass, or brush)	1,836.5
33	Nonvegetative land (including barrens and cities)	10.1
34	Total	1,846.6
		ALL
	Forest land:	
35	Commercial	345.1
36	Noncommercial (productive-reserved and unproductive)	41.3
37	Total forest land	386.4
38	Nonforest land	1,846.6
39	Total all land[4]	2,233.0

1/ Less than 0.05 thousand.

2/ See list of tree species, page 40.

3/ Unclassified as to ownership.

4/ Census Bureau figure (1950).

type, ownership class, and land-use class, 1957

of acres)

Total	Unreserved: Private	Unreserved: State	Unreserved: County	Unreserved: Municipal	Unreserved: Federal: Bureau of Land Mgt.	Unreserved: Federal: National forest	Reserved (State)	
FOREST LAND								
	Commercial						Noncommercial (productive-reserved)	
58.6	15.1	1.6	--	(1/)	0.5	41.4	0.1	1
36.6	31.8	.8	--	(1/)	.2	3.8	--	2
5.6	3.5	.2	--	--	--	1.9	--	3
.9	.9	--	--	--	--	--	--	4
5.0	--	--	--	--	--	5.0	--	5
4.0	.2	--	--	--	--	3.8	--	6
.1	.1	--	--	--	--	--	--	7
28.1	2.0	.5	--	(1/)	(1/)	25.6	--	8
58.9	21.6	1.1	--	0.1	.2	35.9	(1/)	9
17.7	2.4	.2	--	--	(1/)	15.1	--	10
.1	.1	--	--	--	--	--	--	11
8.6	(1/)	--	--	--	--	8.6	--	12
14.0	1.6	(1/)	--	--	--	12.4	--	13
3.1	1.0	.1	--	.1	--	1.9	--	14
.1	.1	--	--	--	--	--	--	15
40.5	13.1	1.3	--	.3	.5	25.3	.1	16
32.1	11.9	1.1	0.1	--	.1	18.9	.1	17
4.6	.3	--	--	--	--	4.3	--	18
(1/)	(1/)	--	--	--	--	--	--	19
1.2	--	--	--	--	--	1.2	--	20
5.6	--	--	--	--	--	5.6	--	21
3.9	.1	--	--	--	--	3.8	--	22
3.7	--	--	--	--	--	3.7	--	23
6.8	(1/)	--	--	--	--	6.8	--	24
.2	.2	--	--	--	--	--	--	25
.7	.7	--	--	--	--	--	--	26
.1	.1	--	--	--	--	--	--	27
4.3	.3	--	--	--	--	4.0	--	28
345.1	107.1	6.9	.1	.5	1.5	229.0	.3	29
UNPRODUCTIVE FOREST LAND								
41.0	1.5	0.6	--	--	0.1	38.8	--	30
41.0	1.5	.6	--	--	.1	38.8	--	31
LAND								
1,836.5	----------		3/1,793.1	----------		43.4	--	32
10.1	6.3	3.1	--	--	0.7	--	--	33
1,846.6	----------		1,803.2	----------		43.4	--	34
LAND								
345.1	107.1	6.9	0.1	0.5	1.5	229.0	--	35
41.0	1.5	.6	--	--	.1	38.8	0.3	36
386.1	108.6	7.5	.1	.5	1.6	267.8	.3	37
1,846.6	----------		1,803.2	----------		43.4	--	38
2,232.7	----------		1,921.5	----------		311.2	.3	39

Table 6.--Land area in Asotin County, by cover type, ownership class, and land-use class, 1957

(In thousands of acres)

Cover type or land class	Total unreserved and reserved	Unreserved					Reserved (State)
		Total	Private	State	Federal: Bureau of Land Mgt.	Federal: National forest	
PRODUCTIVE FOREST LAND							
	Total	Commercial					Noncommercial (productive-reserved)
Ponderosa pine, large sawtimber	9.9	9.8	4.9	0.9	0.2	3.8	0.1
Ponderosa pine, small sawtimber	12.8	12.8	12.5	.2	.1	--	--
Ponderosa pine, poletimber	3.4	3.4	2.1	.1	--	1.2	--
Ponderosa pine, seedlings and saplings	.5	.5	.5	--	--	--	--
Lodgepole pine, poletimber	1.3	1.3	--	--	--	1.3	--
Douglas-fir, small old-growth and large young-growth sawtimber (red fir)	3.9	3.9	.2	--	--	3.7	--
Douglas-fir, small sawtimber	7.6	7.6	2.9	.3	.1	4.3	(1/)
Douglas-fir, poletimber	3.8	3.8	1.1	.2	(1/)	2.5	--
Douglas-fir, seedlings and saplings	(1/)	(1/)	(1/)	--	--	--	--
Western larch, large sawtimber	.6	.6	--	--	--	.6	--
Western larch, small sawtimber	1.0	1.0	.4	--	--	.6	--
Western larch, poletimber	.1	.1	.1	--	--	--	--
White fir,2/ large sawtimber	5.3	5.2	.7	.2	--	4.3	.1
White fir, small sawtimber	6.3	6.2	3.5	.2	--	2.5	.1
White fir, seedlings and saplings	(1/)	(1/)	(1/)	--	--	--	--
True fir—mountain hemlock, small sawtimber	.6	.6	--	--	--	.6	--
True fir—mountain hemlock, poletimber	.6	.6	--	--	--	.6	--
Engelmann spruce, large sawtimber	.6	.6	--	--	--	.6	--
Engelmann spruce, small sawtimber	1.9	1.9	--	--	--	1.9	--
Hardwood, small sawtimber	.2	.2	.2	--	--	--	--
Nonstocked area	1.3	1.3	(1/)	--	--	1.3	--
Total	61.7	61.4	29.1	2.1	.4	29.8	.3
NONCOMMERCIAL UNPRODUCTIVE FOREST LAND							
Noncommercial, rocky	11.9	11.9	0.5	0.2	0.1	11.1	--
Total	11.9	11.9	.5	.2	.1	11.1	--
NONFOREST LAND							
Vegetative land (cultivated, grass, or brush)	318.8	318.8	------	3/ 305.8	-------	13.0	--
Nonvegetative land (including barrens and cities)	8.9	8.9	5.4	2.8	0.7	--	--
Total	327.7	327.7	--------	314.7	-------	13.0	--
ALL LAND							
Forest land:							
Commercial	61.4	61.4	29.1	2.1	0.4	29.8	--
Noncommercial (productive-reserved and unreserved)	12.2	11.9	.5	.2	.1	11.1	0.3
Total forest land	73.6	73.3	29.6	2.3	.5	40.9	.3
Nonforest land	327.7	327.7	--------	314.7	-------	13.0	--
Total all land4/	401.3	401.0	--------	347.1	-------	53.9	.3

1/ Less than 0.05 thousand.

2/ See list of tree species, page 40.

3/ Unclassified as to ownership.

4/ Census Bureau figure (1950).

Table 7.--Land area in Columbia County, by cover type, ownership class, and land-use class, 1957

(In thousands of acres)

Cover type or land class	Total	Unreserved			
		Private	State	Federal	
				Bureau of Land Mgt.	National forest
PRODUCTIVE FOREST LAND					
	Commercial				
Ponderosa pine, large sawtimber	28.7	7.1	0.3	0.1	21.2
Ponderosa pine, small sawtimber	12.4	10.6	.5	.1	1.2
Ponderosa pine, poletimber	1.0	.9	.1	--	--
Ponderosa pine, seedlings and saplings	.2	.2	--	--	--
Lodgepole pine, small sawtimber	2.4	--	--	--	2.4
Lodgepole pine, poletimber	.8	.2	--	--	.6
Lodgepole pine, seedlings and saplings	.1	.1	--	--	--
Douglas-fir, small old-growth and large young-growth sawtimber (red fir)	15.9	.7	.4	(1/)	14.8
Douglas-fir, small sawtimber	28.0	10.4	.5	(1/)	17.1
Douglas-fir, poletimber	8.1	.5	--	--	7.6
Douglas-fir, seedlings and saplings	.1	.1	--	--	--
Western larch, large sawtimber	3.7	--	--	--	3.7
Western larch, small sawtimber	9.1	1.1	(1/)	--	8.0
Western larch, poletimber	.8	.7	.1	--	--
White fir,2/ large sawtimber	23.1	7.2	.5	.3	15.1
White fir, small sawtimber	18.0	5.8	.8	(1/)	11.4
White fir, poletimber	2.6	.2	--	--	2.4
True fir—mountain hemlock, large sawtimber	1.2	--	--	--	1.2
True fir—mountain hemlock, small sawtimber	3.0	--	--	--	3.0
True fir—mountain hemlock, poletimber	2.0	.1	--	--	1.9
Engelmann spruce, large sawtimber	1.8	--	--	--	1.8
Engelmann spruce, small sawtimber	3.0	(1/)	--	--	3.0
Hardwood, large sawtimber	(1/)	(1/)	--	--	--
Hardwood, small sawtimber	(1/)	(1/)	--	--	--
Hardwood, seedlings and saplings	.1	.1	--	--	--
Nonstocked area	1.4	.2	--	--	1.2
Total	167.5	46.2	3.2	.5	117.6
NONCOMMERCIAL UNPRODUCTIVE FOREST LAND					
Noncommercial, rocky	23.7	0.7	0.2	(1/)	22.8
Total	23.7	.7	.2	(1/)	22.8
NONFOREST LAND					
Vegetative land (cultivated, grass, or brush)	358.8	------	3/339.6	---------	19.2
Nonvegetative land (including barrens and cities)	.4	0.3	0.1	--	--
Total	359.2	--------	340.0	--------	19.2
ALL LAND					
Forest land:					
Commercial	167.5	46.2	3.2	0.5	117.6
Noncommercial (unproductive)	23.7	.7	.2	(1/)	22.8
Total forest land	191.2	46.9	3.4	.5	140.4
Nonforest land	359.2	--------	340.0	--------	19.2
Total all land4/	550.4	--------	390.8	--------	159.6

1/ Less than 0.05 thousand.

2/ See list of tree species, page 40.

3/ Unclassified as to ownership.

4/ Census Bureau figure (1950).

Table 8.--Land area in Garfield County, by cover type, ownership class, and land-use class, 1957

(In thousands of acres)

Cover type or land class	Unreserved				
	Total	Private	State	Federal	
				Bureau of Land Mgt.	National forest
PRODUCTIVE FOREST LAND					
	Commercial				
Ponderosa pine, large sawtimber	19.1	2.3	0.2	0.2	16.4
Ponderosa pine, small sawtimber	9.0	6.4	--	(1/)	2.6
Ponderosa pine, poletimber	1.1	.4	--	--	.7
Ponderosa pine, seedlings and saplings	.1	.1	--	--	--
Lodgepole pine, small sawtimber	2.6	--	--	--	2.6
Lodgepole pine, poletimber	1.9	--	--	--	1.9
Douglas-fir, small old-growth and large young-growth sawtimber (red fir)	6.3	(1/)	--	--	6.3
Douglas-fir, small sawtimber	15.4	1.5	.2	--	13.7
Douglas-fir, poletimber	5.4	.4	(1/)	--	5.0
Western larch, large sawtimber	4.3	--	--	--	4.3
Western larch, small sawtimber	3.9	.1	--	--	3.8
Western larch, poletimber	1.9	--	--	--	1.9
White fir,2/ large sawtimber	6.6	.7	--	(1/)	5.9
White fir, small sawtimber	6.0	.9	--	.1	5.0
White fir, poletimber	2.0	.1	--	--	1.9
True fir—mountain hemlock, small sawtimber	2.0	--	--	--	2.0
True fir—mountain hemlock, poletimber	1.3	--	--	--	1.3
Engelmann spruce, large sawtimber	1.3	--	--	--	1.3
Engelmann spruce, small sawtimber	1.9	--	--	--	1.9
Hardwood, large sawtimber	(1/)	(1/)	--	--	--
Nonstocked area	.7	(1/)	--	--	.7
Total	92.8	12.9	.4	.3	79.2
NONCOMMERCIAL UNPRODUCTIVE FOREST LAND					
Noncommercial, rocky	5.0	0.1	--	--	4.9
Total	5.0	.1	--	--	4.9
NONFOREST LAND					
Vegetative land (cultivated, grass, or brush)	358.4	----------	3/ 347.2	----------	11.2
Nonvegetative land (including barrens and cities)	.8	0.6	.2	--	--
Total	359.2	----------	348.0	----------	11.2
ALL LAND					
Forest land:					
Commercial	92.8	12.9	0.4	0.3	79.2
Noncommercial (unproductive)	5.0	.1	--	--	4.9
Total forest land	97.8	13.0	.4	.3	84.1
Nonforest land	359.2	----------	348.0	----------	11.2
Total all land4/	457.0	----------	361.7	----------	95.3

1/Less than 0.05 thousand.

2/See list of tree species, page 40.

3/Unclassified as to ownership.

4/Census Bureau figure (1950).

Table 9.--Land area in Walla Walla County, by cover type, ownership class, and land-use class, 1957

(In thousands of acres)

Cover type or land class	Total	Unreserved				Federal	
		Private	State	County	Municipal	Bureau of Land Mgt.	National forest
PRODUCTIVE FOREST LAND							
		Commercial					
Ponderosa pine, large sawtimber	1.0	0.8	0.2	--	(1/)	(1/)	--
Ponderosa pine, small sawtimber	2.4	2.3	.1	--	(1/)	--	--
Ponderosa pine, poletimber	.1	.1	--	--	--	--	--
Ponderosa pine, seedlings and saplings	.1	.1	--	--	--	--	--
Douglas-fir, small old-growth and large young-growth sawtimber (red fir)	2.0	1.1	.1	--	(1/)	--	0.8
Douglas-fir, small sawtimber	7.9	6.8	.1	--	0.1	0.1	.8
Douglas-fir, poletimber	.4	.4	(1/)	--	--	--	--
Douglas-fir, seedlings and saplings	(1/)	(1/)	--	--	--	--	--
Western larch, large sawtimber	(1/)	(1/)	--	--	--	--	--
Western larch, small sawtimber	(1/)	(1/)	--	--	--	--	--
Western larch, poletimber	.3	.2	--	--	.1	--	--
Western larch, seedlings and saplings	.1	.1	--	--	--	--	--
White fir,2/ large sawtimber	5.6	4.5	.6	--	.3	.2	--
White fir, small sawtimber	1.9	1.7	.1	0.1	--	--	--
White fir, poletimber	(1/)	(1/)	--	--	--	--	--
Hardwood, large sawtimber	.2	.2	--	--	--	--	--
Hardwood, small sawtimber	.5	.5	--	--	--	--	--
Nonstocked area	.9	.1	--	--	--	--	.8
Total	23.4	18.9	1.2	.1	.5	.3	2.4
NONCOMMERCIAL UNPRODUCTIVE FOREST LAND							
Noncommercial, rocky	0.4	0.2	0.2	--	--	--	--
Total	.4	.2	.2	--	--	--	--
NONFOREST LAND							
Vegetative land (cultivated, grass, or brush)	800.5	----------		3/800.5	----------		--
Nonvegetative land (including barrens and cities)	(1/)	(1/)	--	--	--	--	--
Total	800.5	----------		800.5	----------		--
ALL LAND							
Forest land:							
Commercial	23.4	18.9	1.2	0.1	0.5	0.3	2.4
Noncommercial (unproductive)	.4	.2	.2	--	--	--	--
Total forest land	23.8	19.1	1.4	.1	.5	.3	2.4
Nonforest land	800.5	----------		800.5	----------		--
Total all land4/	824.3	----------		821.9	----------		2.4

1/ Less than 0.05 thousand.

2/ See list of tree species, page 40.

3/ Unclassified as to ownership.

4/ Census Bureau figure (1950).

Commercial Forest Land Timber Volume

The net volume of live sawtimber (11.0 inches d.b.h. and larger) on commercial forest land in southeast Washington is estimated to be 2,967 million board feet, Scribner rule. Of this total, 1,537 million board feet is in Columbia County, 813 million board feet in Garfield County, 465 million board feet in Asotin County, and 152 million board feet in Walla Walla County.

Ninety-nine percent of the total Scribner volume in southeast Washington is in sawtimber stands. Sawtimber-size trees in poletimber stands account for most of the remaining volume.

Volume of Sawtimber by Diameter Classes

Most of the sawtimber volume of southeast Washington is found in the 11.0- to 20.9-inch diameter class. Approximately 54 percent of the Douglas-fir, 34 percent of the ponderosa pine, and 42 percent of the white fir sawtimber volume falls in this diameter class. Fifty-four percent of the combined sawtimber volume is in the large-sawtimber size class (21.0 inches d.b.h. and larger), with 66 percent of the ponderosa pine sawtimber volume in this category.

Volume of Sawtimber and Growing Stock by Species

Thirty-two percent of the sawtimber volume in the area is Douglas-fir, 28 percent is ponderosa pine, 22 percent is white fir, and the remainder is mainly western larch and Engelmann spruce.

Growing stock includes all live sound trees 5.0 inches d.b.h. and larger. Eleven species contributed to the volume of growing stock in the area, with Douglas-fir, ponderosa pine, and white fir constituting 77 percent of the total.

Table 10.--Net volume of live sawtimber and growing stock on commercial forest land in southeast Washington, by county and stand-size class, 1957

Stand-size class	Live sawtimber volume										Growing stock volume				
	Scribner rule					International 1/4-inch rule									
	Total	Asotin County	Columbia County	Garfield County	Walla Walla County	Total	Asotin County	Columbia County	Garfield County	Walla Walla County	Total	Asotin County	Columbia County	Garfield County	Walla Walla County
	Million board feet										Million cubic feet				
Sawtimber stands	2,946	459	1,531	805	151	3,253	507	1,687	888	171	849	133	439	233	44
Poletimber stands	19	6	5	8	--	21	7	5	9	--	31	6	13	12	--
Seedling and sapling stands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nonstocked areas	2	(1/)	1	(1/)	1	2	(1/)	1	(1/)	1	1	(1/)	1	(1/)	(1/)
Total	2,967	465	1,537	813	152	3,276	514	1,693	897	172	881	139	453	245	44

1/ Less than 0.5 million.

Table 11.--Net volume of live sawtimber on commercial forest land in southeast Washington, by diameter class and species group, 1957

(In million board feet)

Diameter class (inches d.b.h.) and log rule	Total	Ponderosa pine	Douglas-fir	Western larch	White fir	Other
11.0-20.9:						
Scribner rule	1,374	280	516	117	275	186
International 1/4-inch rule	1,567	325	598	135	297	212
21.0-30.9:						
Scribner rule	940	259	285	94	241	61
International 1/4-inch rule	1,015	280	308	101	260	66
31.0-40.9:						
Scribner rule	544	239	134	44	106	21
International 1/4-inch rule	579	253	142	47	115	22
41.0 and larger:						
Scribner rule	109	49	17	16	27	--
International 1/4-inch rule	115	51	18	17	29	--
All diameter classes:						
Scribner rule	2,967	827	952	271	649	268
International 1/4-inch rule	3,276	909	1,066	300	701	300

Table 12.--Net volume of live sawtimber and growing stock on commercial forest land in southeast Washington, by species, 1957

Species	Live sawtimber volume		Growing stock volume
	Scribner rule	International 1/4-inch rule	
	Million bd.ft.	Million bd.ft.	Million cu.ft.
Softwoods:			
Ponderosa pine	827	909	207
Lodgepole pine	29	34	30
Douglas-fir	952	1,066	252
Western larch	271	300	70
White fir	649	701	223
Subalpine fir	84	90	41
Engelmann spruce	154	175	57
Subalpine larch	--	--	(1/)
Total	2,966	3,275	880
Hardwoods	1	1	1
All species	2,967	3,276	881

1/ Less than 0.5 million.

Table 13.--Net volume of live sawtimber and growing stock on commercial forest land in Asotin County, by species, 1957

Species	Live sawtimber volume		Growing stock volume
	Scribner rule	International 1/4-inch rule	
	Million bd.ft.	Million bd.ft.	Million cu.ft.
Softwoods:			
Ponderosa pine	120	135	40
Lodgepole pine	1	1	5
Douglas-fir	163	181	39
Western larch	26	29	7
White fir	122	131	35
Subalpine fir	9	10	5
Engelmann spruce	24	27	8
Total	465	514	139
Hardwoods	--	--	(1/)
All species	465	514	139

1/ Less than 0.5 million of northwestern paper birch and black cottonwood.

Table 14.--Net volume of live sawtimber and growing stock on commercial forest land in Columbia County, by species, 1957

Species	Live sawtimber volume		Growing stock volume
	Scribner rule	International 1/4-inch rule	
	Million bd.ft.	Million bd.ft.	Million cu.ft.
Softwoods:			
Ponderosa pine	381	416	91
Lodgepole pine	19	22	12
Douglas-fir	503	564	134
Western larch	149	164	38
White fir	368	398	127
Subalpine fir	51	54	25
Engelmann spruce	65	74	25
Subalpine larch	--	--	(1/)
Total	1,536	1,692	452
Hardwoods	2/1	2/1	2/1
All species	1,537	1,693	453

1/Less than 0.5 million.

2/Includes small quantities of red alder, northwestern paper birch, and black cottonwood.

Table 15.--Net volume of live sawtimber and growing stock on commercial forest land in Garfield County, by species, 1957

Species	Live sawtimber volume		Growing stock volume
	Scribner rule	International 1/4-inch rule	
	Million bd.ft.	Million bd.ft.	Million cu.ft.
Softwoods:			
Ponderosa pine	288	315	63
Lodgepole pine	9	11	13
Douglas-fir	196	219	57
Western larch	90	100	23
White fir	141	152	54
Subalpine fir	24	26	11
Engelmann spruce	65	74	24
Total	813	897	245
Hardwoods	(1/)	(1/)	(1/)
All species	813	897	245

1/ Less than 0.5 million of northwestern paper birch and black cottonwood.

Table 16.--Net volume of live sawtimber and growing stock on commercial forest land in Walla Walla County, by species, 1957

Species	Live sawtimber volume		Growing stock volume
	Scribner rule	International 1/4-inch rule	
	Million bd.ft.	Million bd.ft.	Million cu.ft.
Softwoods:			
Ponderosa pine	38	43	13
Douglas-fir	90	102	22
Western larch	6	7	2
White fir	18	20	7
Total	152	172	44
Hardwoods	--	--	(1/)
All species	152	172	44

1/ Less than 0.5 million of northwestern paper birch.

Table 17.--Net volume of all timber on commercial forest land in southeast Washington, by class of material and species group, 1957

(In million cubic feet)

Class of material	Southeast Washington			Asotin County			Columbia County			Garfield County			Walla Walla County		
	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
Growing stock:															
Sawtimber trees:															
Saw-log portion	626	625	1	101	101	--	324	323	1	168	168	(1/)	33	33	--
Upper-stem portion	48	48	(1/)	8	8	--	24	24	(1/)	13	13	(1/)	3	3	--
Total	674	673	1	109	109	--	348	347	1	181	181	(1/)	36	36	--
Poletimber trees	207	207	(1/)	30	30	(1/)	105	105	(1/)	64	64	(1/)	8	8	(1/)
Total growing stock	881	880	1	139	139	(1/)	453	452	1	245	245	(1/)	44	44	(1/)
Other material:															
Sound cull trees	3	2	1	(1/)	(1/)	(1/)	2	1	1	1	1	(1/)	(1/)	(1/)	(1/)
Rotten cull trees	6	6	(1/)	4	4	--	1	1	(1/)	1	1	(1/)	(1/)	(1/)	--
Salvable dead trees	3	3	--	--	--	--	1	1	--	1	1	--	1	1	--
Total other material	12	11	1	4	4	(1/)	4	3	1	3	3	(1/)	1	1	(1/)
All timber	893	891	2	143	143	(1/)	457	455	2	248	248	(1/)	45	45	(1/)

1/ Less than 0.5 million.

Forest Ownership

Commercial Forest Land

Two-thirds (230, 500 acres) of the commercial forest land in southeast Washington is federally owned. The major part of this--229, 000 acres--is in the Umatilla National Forest. The balance is administered by the Bureau of Land Management.

Columbia and Garfield Counties account for nearly 86 percent of the federally owned commercial forest land. Approximately 86 percent (170, 500 acres) of this land in these two counties supports sawtimber stands.

Asotin and Walla Walla Counties have a larger percentage of their commercial forest land in private ownership--47 and 81 percent respectively. Eighty-seven percent of Asotin County's and 95 percent of Walla Walla County's privately owned commercial forest land is covered by sawtimber stands.

Sawtimber Volume

Of the total sawtimber volume of 2, 967 million board feet (Scribner rule) in southeast Washington, 77 percent is federally owned. The volume of sawtimber in private ownership exceeds that on Federal lands only in Walla Walla County. Other public ownerships--State, county, and municipal--contain 1. 6 percent of the total sawtimber volume in the four counties.

Table 18.--Area of commercial forest land in southeast Washington, by county, ownership, and stand-size class, 1957

(In thousands of acres)

County and stand-size class	All ownerships	Private	State	Federal		
				Total	Bureau of Land Mgt.	National forest
All counties:						
Sawtimber stands	300.6	98.0	6.9	195.7	1.5	194.2
Poletimber, seedling and sapling stands	40.2	8.8	.6	30.8	--	30.8
Nonstocked areas	4.3	.3	--	4.0	--	4.0
Total	345.1	107.1	7.5	230.5	1.5	229.0
Asotin County:						
Sawtimber stands	50.4	25.3	1.8	23.3	.4	22.9
Poletimber, seedling and sapling stands	9.7	3.8	.3	5.6	(1/)	5.6
Nonstocked areas	1.3	(1/)	--	1.3	--	1.3
Total	61.4	29.1	2.1	30.2	.4	29.8
Columbia County:						
Sawtimber stands	150.3	42.9	3.0	104.4	.5	103.9
Poletimber, seedling and sapling stands	15.8	3.1	.2	12.5	--	12.5
Nonstocked areas	1.4	.2	--	1.2	--	1.2
Total	167.5	46.2	3.2	118.1	.5	117.6
Garfield County:						
Sawtimber stands	78.4	11.9	.4	66.1	.3	65.8
Poletimber, seedling and sapling stands	13.7	1.0	(1/)	12.7	--	12.7
Nonstocked areas	.7	(1/)	--	.7	--	.7
Total	92.8	12.9	.4	79.5	.3	79.2
Walla Walla County:						
Sawtimber stands	21.5	17.9	2/1.7	1.9	.3	1.6
Poletimber, seedling and sapling stands	1.0	.9	2/ .1	--	--	--
Nonstocked areas	.9	.1	--	.8	--	.8
Total	23.4	18.9	1.8	2.7	.3	2.4

1/ Less than 0.05 thousand.

2/ Includes small acreages of county and municipal ownership.

Table 19.--Net volume of live sawtimber and growing stock on commercial forest land in southeast Washington, by county and ownership class, 1957

Ownership class	Live sawtimber volume										Growing stock volume				
	Scribner rule					International 1/4-inch rule									
	Total	Asotin County	Columbia County	Garfield County	Walla Walla County	Total	Asotin County	Columbia County	Garfield County	Walla Walla County	Total	Asotin County	Columbia County	Garfield County	Walla Walla County
	Million board feet										Million cubic feet				
Private	630	143	287	66	134	712	163	324	75	150	201	49	90	23	39
State	44	12	21	2	9	51	14	24	3	10	13	4	6	1	2
County	(1/)	--	--	--	(1/)	(1/)	--	--	--	(1/)	(1/)	--	--	--	(1/)
Municipal	3	--	--	--	3	4	--	--	--	4	1	--	--	--	1
Federal:															
Bureau of Land Mgt.	10	2	4	2	2	11	2	4	2	3	4	1	1	1	1
National forest	2,280	308	1,225	743	4	2,498	335	1,341	817	5	662	85	356	220	1
Total Federal	2,290	310	1,229	745	6	2,509	337	1,345	819	8	666	86	357	221	2
All ownerships	2,967	465	1,537	813	152	3,276	514	1,693	897	172	881	139	453	245	44

1/Less than 0.5 million.

Log Production

Log production in southeast Washington during the period 1949-58 has fluctuated from a low of 10,617,000 board feet in 1951 to 39,980,000 board feet in 1958. In Asotin County log production has fallen off in recent years, whereas in Columbia and Walla Walla Counties it has increased.

Table 20.--Annual log production in southeast Washington, by county, 1949-58

(In thousands of board feet, Scribner rule)

Year	Total	Asotin County	Columbia County	Garfield County	Walla Walla County
1949	24,609	18,220	350	1,300	4,739
1950	16,790	12,603	--	1,187	3,000
1951	10,617	8,992	220	1,240	165
1952	13,336	6,301	1,721	5,314	--
1953	15,144	12,002	500	2,642	--
1954	18,429	7,448	7,448	533	3,000
1955	14,210	3,906	6,440	2,944	920
1956	12,863	3,165	7,064	624	2,010
1957	25,061	2,781	10,318	2,277	9,685
1958	39,980	5,892	24,727	848	8,513

Table 21.--Average annual cut of live sawtimber and growing stock on commercial forest land in southeast Washington, by species group, 1953-57

Species group[1] and county	Live sawtimber						Growing stock		
	Scribner rule			International 1/4-inch rule					
	Annual cut[2]	Timber products	Logging residue	Annual cut[2]	Timber products	Logging residue	Annual cut[2]	Timber products	Logging residue
	Million board feet						Million cubic feet		
Softwoods in--									
Asotin	6	6	(3)	7	7	1	2	2	(3)
Columbia	6	6	(3)	7	7	1	3	2	(3)
Garfield	2	2	(3)	2	2	1	(3)	1	(3)
Walla Walla	3	3	1	3	3	1	1	1	(3)
Total	17	17	1	19	19	4	6	6	(3)

[1] Hardwood cut insignificant.

[2] Annual cut is the reduction in inventory volume resulting from the production of a given output of timber products.

[3] Less than 0.5 million.

FOREST SURVEY PROCEDURE

Procedures used in the reinventory of Asotin, Columbia, Garfield, and Walla Walla Counties were materially different from those used in the initial inventory. This change in procedures accounts for some significant differences in the forest-area and timber-volume statistics obtained. A brief description of the procedures used in each inventory follows.

Initial Inventory

The initial inventory of the counties' forests was conducted in 1935 by what is known as the compilation method. In this method, existing information on forest types, timber volumes, areas logged, and other inventory data were collected from private timber owners and various public agencies. These data were checked in the field for reliability and were adjusted to Forest Survey specifications and standards. Forest-type and timber-volume data for areas not covered by reliable existing information were obtained through field reconnaissance.

All land in the counties was classified as either forest or nonforest. Forest land was further classified as commercial or noncommercial; the commercial was still further classified by forest type, stand-size or condition class, and--in the case of young-growth stands--by stocking and age classes. All such types and classes were mapped in place on a 1-inch-to-the-mile base map of each forested township. These township type maps were then superimposed over current ownership-status plats and dot counted to obtain forest-type area statistics by ownership class. Type delineations on the township maps were traced to a base map of each county to form county forest type maps. The commercial forest land was also classified as to site quality, or forest productive capacity.

In-place timber-volume estimates were based on existing cruises collected and adjusted to the Forest Survey standard, on field samples, and on ocular appraisals. Cruises made by commercial cruisers were obtained for most of the privately owned timber, and Forest Service cruises were available for a large part of the national-forest lands. Separate volume estimates were computed for each of the commercial tree species and for each ownership class. Methods used in the initial inventory did not permit a statistical computation of accuracy of the estimate.

Reinventory

In the 1957 reinventory, the forest type maps of the counties were completely revised. These revisions were accomplished through interpretation, classification, and field mapping on aerial photos that covered all of the forest land in the counties. In the mapping on aerial photos, types whose classification was difficult were examined more closely in the field. Likewise, species composition of mixed stands was checked on the ground.

The use of aerial photos in mapping resulted in type delineations of much greater accuracy and detail than were possible through the ground reconnaissance employed in the initial inventory. In the preparation of a revised type map, the delineations on the aerial photos were transferred to 2-inch county base maps through use of a reflecting projector.

Forest type areas were obtained by two methods. In the first method, area figures were derived by superimposing the type map over a current ownership-status map and dot counting. This was done for the "all other ownership" stratum, which included private, county, State, and Federal lands other than national forest.

The second method, used to determine land area in the Wenaha Working Circle and the Wenaha Land Management Unit of the Umatilla National Forest, was based on a systematic grid of plots. Each of three subplots in a plot cluster was first classified as commercial forest, noncommercial forest, or nonforest. The ratio of subplots in each class to the total number of subplots was applied to the total land area to determine the acreage of each classification. Subplots falling on commercial forest land were classified by forest type and stand-size class as indicated by the subplot tally. The percentage of subplots falling in each type was applied to the total area of commercial forest land in the working circle to determine the acreage of land in that type.

Volume estimates for live sawtimber, growing stock, and salvable dead material for the "all other ownership" stratum were calculated by applying average per-acre volumes to the appropriate forest type acreages. The average per-acre volumes for sawtimber and poletimber stands were obtained through a grid sampling procedure in which the stands were measured at a 3.4-mile interval. Intensity of sampling was designed to produce a total volume estimate in the counties to a specified sampling accuracy set by Forest Survey. The sample consisted of clusters of three 1/5-acre circular subplots spaced at 6-chain intervals.

In the Wenaha Working Circle and Wenaha Land Management Unit, volume estimates for all size classes were determined by species for all subplots falling on commercial forest land. Average per-acre volumes for commercial forest land plots were then expanded by the total acreage of commercial forest land, providing total volume by species for each working circle inventoried.

ACCURACY OF 1957 REINVENTORY DATA

Forest Area

The in-place mapping of the forests and their classification by forest type, stand-size class, and condition class were based on 100-percent coverage for the "all other ownership" stratum. Thus no error

due to sampling was involved. Errors due to techniques or judgment in the field and in office computation of data were possible, but difficult to evaluate. Throughout all phases of the work, however, close supervision and frequent checks assured a high level of accuracy and uniformity of standards.

The Wenaha Working Circle and Wenaha Land Management Unit were sampled for area, consequently an accuracy figure could be calculated. The chances are 19 out of 20 that the actual total area of commercial forest land is within plus or minus 7.9 percent of the estimated total of 228,951 acres, and that the noncommercial unproductive area is within plus or minus 36.6 percent of the estimated total of 38,859 acres.

Timber Volume

The chances are 19 out of 20 that the total board-foot volume of live sawtimber, if measured by a 100-percent cruise, would be within plus or minus 12.30 percent of the estimated total of 2,967 million board feet, Scribner rule. On the same basis, cubic-foot volume of growing stock from a 100-percent cruise would be within a range of plus or minus 10.28 percent of the estimated 881 million cubic feet. Volume estimates by species, stand-size class, or other subdivision probably have greater sampling errors.

DIFFERENCES IN RESULTS OF INVENTORIES

Some of the differences between forest-type and timber-volume statistics resulting from the initial inventory and the reinventory are due to physical change--such as cutting of stands, restocking of deforested areas, and ingrowth of stands into the next larger size class. Other differences are due to changes in the procedures used to interpret and classify forest conditions and to changes in standards of utilization. Differences such as these preclude direct comparison of some of the statistics.

Forest Area

The total forest area figures for the area and individual counties show little change between the two inventories, the largest change for an individual county being 7,000 acres for Asotin County.

The figures on forest area by size class indicate a shift from the noncommercial and poletimber-seedling and sapling classes to the sawtimber class. The shift from the noncommercial category is the result of changed standards for judging commercial forest land. Some 30,000 acres formerly considered too rough and steep to log are now accepted as commercial forest land. In addition, nearly 14,000 acres of upper-slope types formerly considered subalpine (forests at upper limits of tree growth) are commercial forest land by present standards.

Table 22.--Comparison of forest area statistics for southeast Washington, initial inventory and reinventory

(In thousands of acres)

Forest area	Total		Asotin County		Columbia County		Garfield County		Walla Walla County	
	1935	1957	1935	1957	1935	1957	1935	1957	1935	1957
Sawtimber	168	300	39	50	75	150	50	78	4	22
Poletimber; seedlings & saplings	120	41	16	10	58	16	29	14	17	1
Nonstocked	2	4	--	1	2	1	(1/)	1	--	1
Noncommercial	85	41	11	12	53	24	20	5	1	(1/)
Total	375	386	66	73	188	191	99	98	22	24

1/ Less than 0.5 thousand.

The shift of acreage from small size classes to sawtimber stands cannot be attributed to growth. Most of the difference is due to different inventory standards and classification techniques.

Timber Volume

The increased volume of the 1957 inventory over that of 1935, as shown in table 23, is primarily due to different standards. Primary reasons for the increase are (1) the reclassification into commercial forest categories of stands formerly considered unmerchantable, (2) the acceptance of species formerly considered noncommercial, and (3) more realistic cull estimates.

Table 23.--Comparison of timber volume statistics for southeast Washington, initial inventory and reinventory

(In million board feet, Scribner rule)

Species	Total		Asotin County		Columbia County		Garfield County		Walla Walla County	
	1935	1957	1935	1957	1935	1957	1935	1957	1935	1957
Douglas-fir	184	952	40	163	78	503	61	196	5	90
Ponderosa pine	402	827	139	120	115	381	140	288	8	38
White fir	196	649	36	122	110	368	41	141	9	18
Western larch	166	271	28	26	74	149	63	90	1	6
Engelmann spruce	66	154	10	24	23	65	31	65	2	--
Subalpine fir	31	84	1	9	18	51	12	24	--	--
Other species	15	30	1	1	5	20	8	9	1	--
Total	1,060	2,967	255	465	423	1,537	356	813	26	152

DEFINITION OF TERMS

Land Area

Total Land Area

Includes dry land and unmeandered water surfaces.

Forest Land Area

Includes (a) land that is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; and (b) land from which the trees described in "(a)" have been removed to less than 10-percent stocking and that has not been developed for other use. Minimum area of forest land recognized in reinventory of the counties is 10 acres.

Nonforest Land Area

Land that does not qualify as forest land. Minimum area recognized in the reinventory of the counties is 10 acres.

Forest Land Classes

Commercial Forest Land Area

Forest land that is (a) producing, or physically capable of producing, usable crops of wood, usually sawtimber, (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial Forest Land Area

Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, or (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Types

Forest Land Types

Forest land is typed on the basis of the predominant species, as indicated by cubic volume for sawtimber and poletimber stands and number of trees for seedling and sapling stands, or on the basis of forest condition, such as nonstocked cutover or burned-over land. Where none of the indicated species comprise 50 percent or more of a given stand, the stand is

classified on the basis of plurality of cubic volume or number of trees. In classifying forest land by type, the minimum area recognized is 10 acres.

Commercial Forest Land

Major forest types. Local forest types are grouped into generalized types. The major forest types in southeast Washington are as follows:

Ponderosa pine. Forests in which 50 percent or more of the stand is ponderosa pine.

Lodgepole pine. Forests in which 50 percent or more of the stand is lodgepole pine.

Douglas-fir. Forests in which 50 percent or more of the stand is Douglas-fir.

Western larch. Forests in which 50 percent or more of the stand is western larch.

Fir-spruce. Forests in which 50 percent or more of the stand is true fir (Abies spp.) or Engelmann spruce, singly or in combination.

Hardwoods. Forests in which 50 percent or more of the stand is black cottonwood or other hardwoods, singly or in combination.

Noncommercial Forest Land

Productive-reserved. Forest land withdrawn from timber utilization through statute, ordinance, or administrative order, but which otherwise qualifies as commercial forest land.

Unproductive. Forest land incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Nonforest Land Types

Vegetative. Cultivated land, stump pasture, grass, or brush on nonforest land.

Nonvegetative. Includes barrens and towns.

Unmeandered water. Includes unmeandered streams and lakes, and tideflats.

Tree Classes

Sawtimber Tree

Tree of commercial species, 11.0 inches d.b.h. or larger, that contains at least one 16-foot coniferous saw log or one 8-foot hardwood saw log to a variable top diameter never less than 8 inches inside the bark. Also, 25 percent or more of the gross board-foot volume must be free from rot or defect.

Poletimber Tree

Tree of commercial species, 5.0 to 10.9 inches d.b.h., in which 25 percent or more of the gross cubic-foot volume is free from rot and defect.

Seedling and Sapling Trees

Live trees of commercial species, less than 5.0 inches d.b.h., and of good form and vigor.

Cull Tree

Live tree of sawtimber or poletimber size that is unmerchantable for saw logs, now or prospectively, because of defect, rot, or species.

Sound cull tree. Live tree of sawtimber or poletimber size that contains 25 percent or more of sound volume but will not make at least one merchantable saw log, now or prospectively, because of roughness, poor form, or species.

Rotten cull tree. Live tree of sawtimber or poletimber size in which less than 25 percent of the total volume is sound.

Salvable Dead Tree

Standing or down dead tree that contains 25 percent or more of sound volume and at least one merchantable 16-foot coniferous or 8-foot hardwood saw log.

Stand-Size Classes

Sawtimber Stand

Stand of sawtimber trees having a minimum per-acre net volume of 1,500 board feet (International 1/4-inch rule).

Large sawtimber stand. Stand in which the majority of the volume is in trees 21.0 inches d.b.h. and larger.

Small sawtimber stand. Stand in which the majority of the volume is in trees from 11.0 to 20.9 inches d.b.h.

Uncut sawtimber stand. Uncut sawtimber stand or sawtimber stand in which less than 10 percent of its volume has been removed by cutting.

Residual sawtimber stand. Sawtimber stand in which 10 percent or more of the volume has been removed by cutting, and in which the residual per-acre volume amounts to at least 1,500 board feet (International 1/4-inch rule).

Poletimber Stand

Stand failing to meet sawtimber stand specifications but at least 10 percent stocked with poletimber and larger (5.0 inches d.b.h. and larger) trees and with at least half the minimum stocking in poletimber trees.

Seedling and Sapling Stand

Stand not qualifying as either a sawtimber or poletimber stand but at least 10 percent stocked with trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked Area

An area less than 10 percent stocked with present or potential growing-stock trees.

Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. "Degree of stocking" is synonymous with "percentage of growing space occupied" and means the ratio of actual stocking to full stocking for comparable sites and stands. Stocking may be measured in terms of number of trees, volume, basal area, cover canopy, or other criterion or combination of criteria.

Well-stocked stand. Stand that is 70 percent or more stocked with present or potential growing-stock trees.

Medium-stocked stand. Stand that is 40 to 69 percent stocked with present or potential growing-stock trees.

Poorly stocked stand. Stand that is 10 to 39 percent stocked with present or potential growing-stock trees.

Nonstocked area. An area less than 10 percent stocked with present or potential growing-stock trees.

Timber Volume

Live Sawtimber Volume

Net volume in board feet of live sawtimber trees of commercial species:

Scribner rule. The common board-foot log rule used in determining volume of sawtimber in the Pacific Northwest.

International 1/4-inch rule. The standard board-foot log rule adopted nationally by the Forest Service in the presentation of Forest Survey volume statistics.

Growing Stock

Net volume in cubic feet of live sawtimber and poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

All-Timber Volume

Net volume in cubic feet of live and salvable dead sawtimber and poletimber trees of commercial species, and cull trees of all species, from stump to a minimum 4.0-inch top inside bark.

Timber Cut

Annual Cut of Live Sawtimber

The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Timber products from live sawtimber. The volume of timber products cut from live sawtimber.

Logging residues from live sawtimber. The volume of sound wood in live sawtimber trees cut or killed by logging on commercial forest land and not converted to timber products.

Annual Cut of Growing Stock

The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Timber products from growing stock. The volume of timber products cut from growing stock.

Logging residues from growing stock. The volume of sound wood in growing stock cut or killed by logging on commercial forest land and not converted to timber products.

TREE SPECIES

Tree species commonly found in southeast Washington include:

Softwoods: Ponderosa pine (Pinus ponderosa)
Lodgepole pine (Pinus contorta)
Douglas-fir (Pseudotsuga menziesii)
White fir (Abies concolor or A. grandis)[1/]
Subalpine fir (Abies lasiocarpa)
Western larch (Larix occidentalis)
Engelmann spruce (Picea engelmannii)
Western juniper (Juniperus occidentalis)
Mountain hemlock (Tsuga mertensiana)
Whitebark pine (Pinus albicaulis)

Hardwoods: Black cottonwood (Populus trichocarpa)
Quaking aspen (Populus tremuloides)
Northwestern paper birch (Betula papyrifera var. subcordata)

[1/] No attempt was made to separate A. concolor (white fir) from A. grandis (grand fir). White fir, as specified in the Forest Survey in the Pacific Northwest, may be concolor, grandis, or both.

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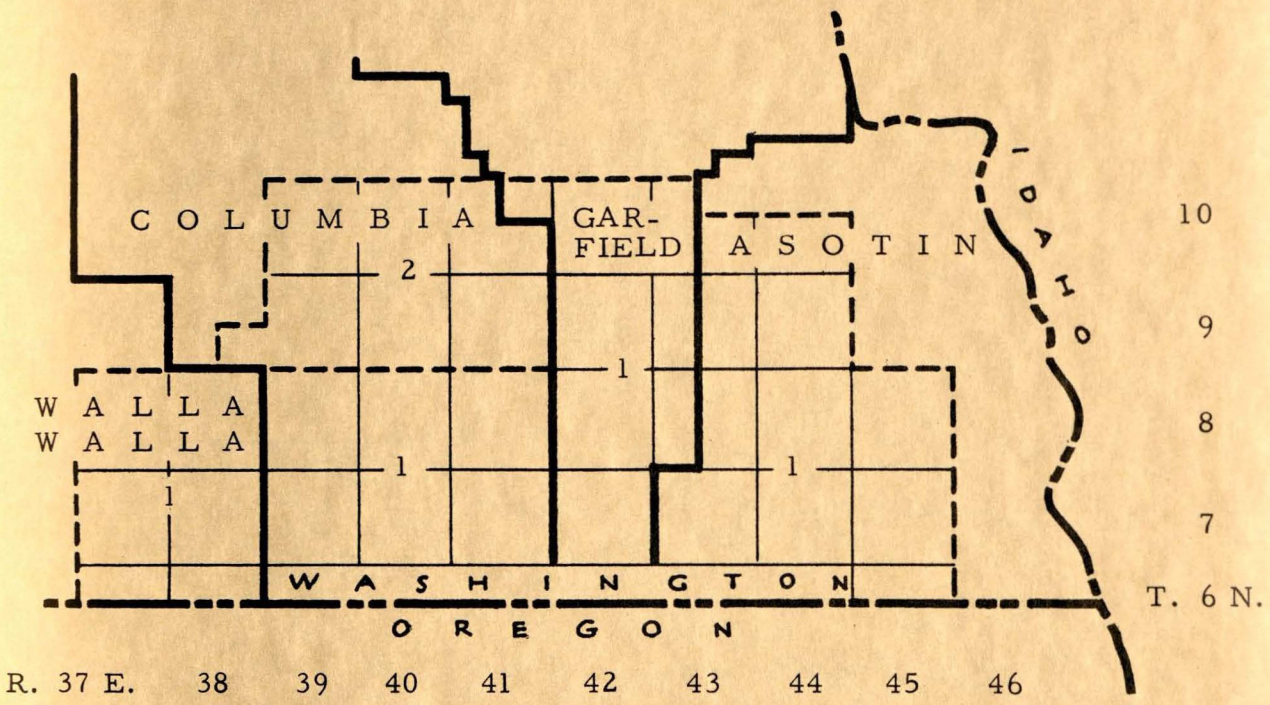

INDEX MAP of

WALLA WALLA CO.

COLUMBIA CO.

GARFIELD CO.

ASOTIN CO.

STATE of WASHINGTON

showing divisions of 2" = 1 mile maps by counties